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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/264,547	03/08/1999	TIMOTHY N. JONES	09943/006001	3355

7590 05/31/2002

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EXAMINER

WILSON, JOHN J

ART UNIT	PAPER NUMBER
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3732

DATE MAILED: 05/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/264,547

Applicant(s)

JONES ET AL.

Examiner

John J. Wilson

Art Unit

3732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-120 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20, 116 and 117 is/are allowed.
- 6) ☒ Claim(s) 1-19, 21-99, 114, 115 and 118-120 is/are rejected.
- 7) ☒ Claim(s) 100-113 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 7-9, 11-17, 19, and 21-97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al (5338198) in view of Andreiko et al (5683243) and Yoon et al (5742700). Wu shows scanning and receiving a 3D data set, finding a component and creating a model of the component using segmentation, column 7, lines 7-10. Wu does not show scanning a model. Andreiko teaches that it is known to obtain data from a model. It would be obvious to one of ordinary skill in the art to modify Wu to include scanning a model as shown by Andreiko. During the building of a digital model from scanned data, the computer automatically applies tests to the incoming data to build the digital model, as an example see column 8, lines 6-15 of Wu. The segmentation taught by Wu inherently teaches identifying elements or components. Wu does not specifically state segmenting by boundary points. Yoon teaches that it is known to segment by boundary points, Fig. 3, including both automatic and manual segmentation. It would be obvious to one of ordinary skill in the art to modify Wu to include segmenting components using boundary segmentation as taught by Yoon in order to better manipulate the desired regions. To use well known computer graphic tools for this manipulation is an obvious matter of choice in the use of known tools for a known result to one of ordinary skill in the art. As to claim 75, Wu teaches a 3D data set, however, does not show selecting based on an interproximal margin. Andreiko (243) teaches extracting the spacing between teeth. It would be obvious to one of ordinary skill in the art to modify Wu to include using the margins to

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manipulate data as shown by Andreiko (243) in order to better manipulate the desired regions. That the scanned data can be stored as a 3D volumetric representation is an obvious matter of choice in known imaging to one of ordinary skill in the art. The specific mathematical algorithm used to find the desired portion is an obvious matter of choice in known algorithms for segmentation of data to one of ordinary skill in the art. Yoon also teaches isolating a tooth, see 94 in Fig. 3B and column 5, lines 30-40. It would be obvious to one of ordinary skill in the art to modify the above combination to include segmenting a tooth as suggested by Yoon in order to isolate the area it is desired to work with. To use automated calculations is an obvious matter of choice in known alternative as shown by the art to the skilled artisan.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al in view of Andreiko et al (243) and Yoon et al as applied to claim 1 above and further in view of Poirier. Wu shows the steps described above, however, Wu does not show the use of X-ray or MRI to obtain data. Poirier teaches obtaining data using X-rays or an MRI, column 3, lines 12-20. It would be obvious to one of ordinary skill in the art to modify the above combination to include using X-rays or an MRI as shown by Poirier in order to make use of art known ways to best gather needed data.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al in view of Andreiko et al (243) and Yoon et al as applied to claim 1 above and further in view of Andersson. Wu shows the steps described above, however, does not show data taken from a photographic image. Andersson teaches taking data from an image, column 2, lines 57-60. It would be obvious to one of ordinary skill in the art to modify the above combination to include using a photographic image as shown by Andersson in order to make use of art known ways to best gather needed data.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al in view of Andreiko et al (243) and Yoon et al as applied to claim 1 above, and further in view of Brandestini et al. Wu shows the steps described above, however, does not show data from directly imaging teeth. Brandestini teaches taking data from directly imaging teeth, column 2, lines 33-36. It would be obvious to one of ordinary skill in the art to modify the above combination to include using direct imaging as shown by Brandestini in order to make use of art known ways to best gather needed data.

Claims 10, 18, 98, 99, 114, 115 and 118-120 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al in view of Andreiko et al (243) and Yoon et al as applied to claim 1 above, and further in view of Andreiko et al (5395238). Wu shows the steps described above, however, does not show the segment being gum tissue. Andreiko (238) teaches data for the gums, see Abstract. It would be obvious to one of ordinary skill in the art to modify the above combination to include gum tissue as a component as shown by Andreiko (238) in order to treat the desired area of the mouth. The specific mathematical algorithm used to find the desired portion is an obvious matter of choice in known algorithms for segmentation of data to one of ordinary skill in the art.

Allowable Subject Matter

Claims 20, 116 and 117 are allowed.

Claims 100-113 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

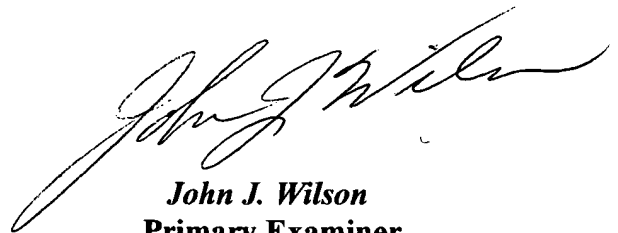
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Response to Arguments

Applicant's arguments filed February 20, 2002 have been fully considered but they are not persuasive. The examiner stated that Wu teaches segmentation and that the use of boundary segmentation was known and obvious. Applicant challenged this statement, therefore, the new reference to Yoon et al has been applied to support the examiners position with evidence, also see the newly cited reference to Clark et al as further evidence that boundary segmentation is well known.

Conclusion

Any inquiry concerning this communication should be directed to John Wilson at telephone number (703) 308-2699.



**John J. Wilson
Primary Examiner
Art Unit 3732**

jjw
May 25, 2002
Fax 703-308-2708